

MILITARY SPECIFICATION SHEET
ELECTRON TUBE, RECEIVING
TYPE 5751

This specification is approved for use by all Departments and Agencies of the Department of Defense.

The complete requirements for procuring the electron tube described herein shall consist of this document and the latest issue of Specification MIL-E-1.

DESCRIPTION: Twin triode, miniature, high Mu

Outline --- 6-2 (EIA)
Base --- E9-1
Envelope --- T6-1/2
Cathode --- Coated unipotential

Base connections:

Pin No.	---	1	2	3	4	5	6	7	8	9
Element	---	2a	2g	2k	h	h	1a	1g	1k	hct

ABSOLUTE-MAXIMUM RATINGS:

Parameter:	Ef	Eb	Ec	Ehk	Rg/g	Ik/k	Pp/p	TE	Alt
Unit:	V	Vdc	Vdc	v	Meg	mAdc	W	°C	ft
Maximum	13.8	330	0,-50	100	0.5	6	0.8	+165	(see note 1)
Maximum:	6.9	---	---	---	---	---	---	---	---
Minimum:	11.4	---	---	---	---	---	---	---	---
Minimum:	5.7	---	---	---	---	---	---	---	---
<u>TEST CONDITIONS:</u>	12.6	250	-3	0	---	---	---	---	---

GENERAL:

Qualification - Required

Reliable tube

METHOD	REQUIREMENT OR TEST	CONDITIONS	AQL (PERCENT DEFECTIVE)	INSPECTION LEVEL OR CODE	SYMBOL	LIMITS		UNIT
						MIN	MAX	
	<u>Quality conformance inspection, part 1</u>							
1301	Heater current		0.4	II	I _f	160	190	mA
1336	Heater-cathode leakage	See note 2	0.4	II	I _{hk}	---	10	μAdc
1266	Total grid current	R _{g/g} = 0.5 Meg (see notes 2 and 3)	0.4	II	I _c	0	-0.4	μAdc
1256	Electrode current (1) (anode)	See note 2	0.4	II	I _b	0.4	1.8	mAdc
1256	Electrode current (2) (anode)	E _c = -10.5 Vdc R _p = 0.1 Meg (see note 2)	0.4	II	I _b	---	10	μAdc
1321	AC amplification	E _{bb} = 100 Vdc; E _c = 0; E _{sig} = 0.2 Vac; R _p = 0.5 Meg; R _g = 10 Meg (see note 2)	0.4	II	E _p	7.5	---	Vac
1201	Short and discontinuity detection		0.4	II	---	---	---	---
	<u>Quality conformance inspection, part 2</u>							
1211	Insulation of electrodes	See note 2	2.5	I	R	500	---	Meg
1256	Electrode current (1) (anode) (difference between sections)		2.5	I	I _b	---	0.6	mAdc
1306	Transconductance (1)	See note 2	2.5	I	S _m	900	1600	μmhos
1306	Transconductance (2)	E _f = 11.4 V (see note 2)	2.5	I	Δ S _m E _f	---	15	%
1266	Grid emission	E _f = 15.0 V; R _{g/g} = 0.5 Meg; E _c = -12.0 Vdc (see notes 2 and 4)	2.5	I	I _c	0	-0.6	μAdc
2201	Noise and microphonics	E _f = 12.6 Vac; E _{bb} = 300 Vdc; E _c = 0; E _{cal} = 60 mVac; R _k = 1,500 ohms; R _p = 0.1 Meg (see note 5)	2.5	I	---	---	---	---

METHOD	REQUIREMENT OR TEST	CONDITIONS	AQL (PERCENT DEFECTIVE)	INSPECTION LEVEL OR CODE	SYMBOL	LIMITS		UNIT
						MIN	MAX	
	<u>Quality conformance inspection, part 2</u> -Continued							
1316	Amplification factor	See note 2	6.5	S3	Mu	55	85	---
1331	Direct-interelectrode capacitance	No shield (note 2) No shield (note 2) No shield, sec 1 No shield, sec 2	6.5	Code E	Cgp Cin Cout Cout	1.10 1.10 0.23 0.19	1.70 1.70 0.69 0.53	pF pF pF pF
1031	High-frequency vibration	Rp = 2,000 ohms; (see note 5)	6.5	Code H	Ep	---	100	mVac
1031	Sweep-frequency vibration	Rp = 2,000 ohms (see note 5)	6.5	See note 6	Ep	---	300	mVac
1041	Shock	630 G; Ehk = +100 Vdc (see note 7)	6.5	See note 6	---	---	---	---
1031	Vibration fatigue		6.5	See note 6	---	---	---	---
---	Post-shock and vibration- fatigue test end points:							
1031	Low-frequency vibration		---	---	Ep	---	150	mVac
1336	Heater-cathode leakage		---	---	Ihk	---	20	μAdc
1321	AC amplification		---	---	Ep	6.5	---	Vac
1266	Total grid current		---	---	Ic	0	-0.6	μAdc
1121	Base strain	See note 8	---	---	---	---	---	---
2126	Envelope strain		2.5	I	---	---	---	---
1105	Permanence of marking		---	---	---	---	---	---

METHOD	REQUIREMENT OR TEST	CONDITIONS	SYMBOL	LIMITS		UNIT
				MIN	MAX	
	<u>Quality conformance inspection, part 3</u>					
1506	Heater-cycling life	Ef = 7.5 V; heaters in parallel; Ehk = +135 Vdc; Ec = Eb = 0	---	---	---	---
---	Heater-cycling life-test end point:					
1336	Heater-cathode leakage		Ihk	---	15	---
1516	Stability life	Ehk = 135 Vdc; Ec = -2 Vdc; Rg/g = 0.5 Meg; TA = room	---	---	---	---
---	Stability life-test end point (2 and 20 hours):					
1321	Change in amplification of individual tubes		ΔEp t	---	10	%

METHOD	REQUIREMENT OR TEST	CONDITIONS	SYMBOL	LIMITS		UNIT
				MIN	MAX	
	<u>Quality conformance inspection, part 3</u> -Continued					
1501	Intermittent life	Ehk = 135 Vdc; Ec = -2 Vdc; Rg/g = 0.5 Meg; TA = room; TE = +165°C (min) (see note 9) Group E	---	---	---	---
---	Intermittent life-test end points (1,000 hours):					
---	Inoperatives		---	---	---	---
1266	Total grid current		Ic	0	-0.4	μAdc
1301	Heater current		If	160	196	mA
1321	Change in AC amplification of individual tubes		ΔEp	---	20	%
1336	Heater-cathode leakage		Ihk	---	10	μAdc
1211	Insulation of electrodes		R	200	---	Meg
1511	Cathode interface life	Ef = 6.9 V; heaters in parallel (see note 2)	Ri	---	50	Ohms

NOTES:

- See "Reduced pressure (altitude) rating", and altitude, maximum peak voltage.
- Test each unit separately.
- This test shall be performed at the conclusion of the holding period.
- Prior to this test, tubes shall be preheated a minimum of 5 minutes with all sections operating at the conditions indicated below. The 3-minute test is not permitted. Test at specified conditions within 3 seconds after preheating. Grid emission shall be the last test performed on the sample selected for the grid-emission test.

Ef	Ec1	Eb	Rk/k	Rg/g
V	Vdc	Vdc	Ohms	Meg
15.0	-3.0	250	0	0.5
- Tie 1k to 2k; 1g to 2g; and 1a to 2a.
- This test shall be conducted on the initial lot and thereafter on a lot approximately every 12 months. In the event of lot failure, the lot shall be rejected and the succeeding lots shall be subjected to this test until a lot passes. When one lot has passed, the 12-month rule shall apply. MIL-STD-105, sample size code letter E, shall apply.
- A grid resistor of 0.1 megohm shall be added to each section; however, this resistor shall not be used when a thyatron-type short indicator is employed.
- Acceptance sampling procedure shall be in accordance with "Base-strain test, miniature, sampling (method 1121)", except that data covered in "Acceptance and rejection criteria" shall be modified as follows:
 - Accepted if not more than one defective for class "A", "B", or "C" defects, respectively (see method 1121), or if not more than a total of two defectives are found in the sample.
 - Rejected if two or more defectives for class "A", "B", or "C" defects, respectively, or if a total of three or more defectives are found in the sample.
- Envelope temperature (TE) requirements, when measured in accordance with the temperature by conduction-band measurement (method 1226), will be satisfied if a tube having bogey Ib (±5 percent) under normal test conditions, is determined to operate at or above minimum specified temperature at any position in the life-test rack.
- Revision letters are not used in this revision to identify changes with respect to the previous issue, due to the extensiveness of the changes.

Custodians:

Army - ER
Navy - EC
Air Force - 85

Preparing activity:

Navy - EC

Agent:

DLA - ES

Review activities:

Navy -
Air Force - 99
DLA - ES

(Project 5960-3226)

User activities:

Army - AR, ME
Navy - AS, OS, MC, CG
Air Force - 11

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